Virtual Continuity and its Impact on Complex Hospitalized Patients' Care

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Summary: Hospital care processes have changed dramatically over the last 10-to-15 years. Previously, hospitalized patients were cared for by their primary care physicians (PCPs), facilitating continuity of care between inpatient and ambulatory care settings. Currently, many hospitalized patients are cared for by hospital staff physicians and returned to PCPs' care upon discharge. Without dedicated information transfer processes, this stratification of care can lead to information loss and medical error. Heightened communication with and involvement by the PCP in the care of hospitalized patients should decrease medication, diagnostic, and followup errors, thereby improving medical care quality and safety as well as patient and physician satisfaction.

This project enhanced MedTrak, the University of Pittsburgh Medical Center's electronic physician communication tool, with an intervention called Virtual Continuity. Virtual Continuity allowed PCPs to follow their hospitalized patients electronically and participate more directly in their care through the use of emails that are triggered by clinical events. These emails were embedded with links to electronic medical record (EMR) data and communication portals, medication lists delivered at the time of admission and discharge, and immediate notification of discharge with pertinent clinical details.

A pre-post study compared the frequency of discharge medication errors before and after initiation of the Virtual Continuity intervention. Additional evaluation measures included PCPs' frequency and timeliness of receiving information; PCPs' perception of information exchange adequacy and usefulness; patients' satisfaction with care and the information they received; rates of rehospitalization; post-discharge emergency department visits; and PCP followup visits. The costs of implementing and maintaining the Virtual Continuity intervention were also assessed.

Specific Aims:

- Augment the present system of PCP notification through the development and use of electronic EMR links to allow Virtual Continuity for the PCP. **(Achieved)**
- Measure differences in patient care safety and quality between PCPs receiving Virtual Continuity versus usual communication in a pre-post study. **(Achieved)**

2012 Activities: Project activities focused on final analysis and development of a manuscript for submission to a peer reviewed publication. The project ended in January 2013.

Preliminary Impact and Findings: In Round 1 of the Delphi survey, 41.6 percent or 37 of 89 items were accepted by consensus and one was rejected. Of the 51 remaining items included in the Round 2 survey, six were accepted by consensus. At the start of the hospital stay, experts wanted emergency department visit data, including physician documentation, laboratory, and radiology results; medications; notification of admitting diagnoses; and consultants' evaluation data. Primary care physicians wanted a brief description of the hospital course, discharge medication and medication reconciliation data, key hospitalization findings, a list of pending tests and their eventual results, and followup plans.

Differences in medication errors remained statistically significant on multivariable analysis adjusting for age, sex, and a comorbidity index score. Differences between PCP followup visits and emergency department visits at 30 days were no longer significant after adjustment. No significant differences were seen between groups in clinically important medication errors or in 30-day readmission or mortality rates. Statistically significant decreases in medication errors, in both unadjusted and adjusted analyses, were demonstrated when comparing the pre- and post-intervention periods. Clinically significant medication errors were rare and not significantly different between groups. Thirty-day patient outcomes were not significantly different between groups after adjustment. The absence of a randomized trial precluded any consideration of comparing differences in PCPs experiences with and without the intervention, and the retrospective nature of the pre-intervention data collection precluded any comparison of PCP experience pre- and post-intervention.

Target Population: Adults

Strategic Goal: Develop and disseminate health IT evidence and evidence-based tools to support patient-centered care, the coordination of care across transitions in care settings, and the use of electronic exchange of health information to improve quality of care.

Business Goal: Knowledge Creation
